

Police Car Accidents Evidence Spoliation Risk Alert (CDR PCM)

by Richard Ruth, Ruth Consulting
www.ruthconsulting.com

OCTOBER 2007
EMAIL NEWS RELEASE

Dear Scott Baker

Attention:

Police Chiefs
Internal Affairs Investigators
Lead Accident Reconstructionists
Private Practice Reconstructionists

Police Car Accidents: Evidence Spoliation Risk Alert

By Richard Ruth
October 11, 2007

If one of your Crown Victoria Police Interceptor vehicles has an accident with a civilian vehicle and people are injured, you naturally want to know the facts as to what happened. You may not yet be aware that 2005 and later Crown Victoria vehicles have a second, **much more powerful event data recorder than the Restraint Control Modules** found in 2001-2004 Crown Victorias. It is located in the Powertrain Control Module (PCM). If airbags or seat belt pretensioners deployed, the vehicle is designed to store vehicle speed, brake on/off, ABS on/off, accelerator pedal position, and other parameters for 20 seconds before the crash and 5 seconds after the crash at 0.2 seconds intervals. The vehicle is designed to set a data "locking" signal when airbags or seat belt pretensioners deploy. Under some circumstances, such as electrical short circuits caused by crash damage, or complete power loss in the vehicle, the locking signal may not get set. You need to be aware that in the absence of a lock signal that the recorder is designed to continuously overwrite itself, and after 25 seconds of power on without a lock signal, the data relevant to the event is overwritten and lost. If airbags do not deploy, but the key is turned off in less than 25 seconds of the event, there will be speed/brake/accelerator information relevant to the event that can still be retrieved.

There are documented instances where there was a severe crash, power was lost, but a well meaning investigator restored power to check other functions in the vehicle or read out the Restraint Control Module event data recorder. **That well meaning investigator unintentionally spoliated the best evidence of what happened during the event.**

Your department needs to be aware that the best way to preserve this evidence is to train driving officers to turn the key off as soon as possible after an event. (For example, if the key was turned off 15 seconds after the event, there would still be 10 seconds of pre-crash data available to investigators). Investigators can also be trained to secure evidence after a crash by pocketing the keys, and/or unplugging the Powertrain Control Module (PCM) under the hood. Unplugging the module is the most effective way to prevent accidental spoliation of any evidence remaining in the PCM. The PCM can also be secured by removing it, it only takes unscrewing one bolt and pulling the PCM out of two clips to get it out. Your department may want to consider adopting policies or procedures for securing PCM evidence after a crash of one of your vehicles.

This data can be accessed using the Bosch "Crash Data Retrieval" (CDR) system with the new Ford PCM adaptor and new version 3.0 or higher software that is expected to be available approximately November 15, 2007, barring unforeseen problems developing during the final testing taking place at this time (*visit www.cdr-system.com to order the Ford PCM adaptor when available*). Beta testers can read modules now to aid internal investigations, with the understanding that modules should be re-read with the final production software and hardware if the evidence is needed for use in court.

If your department wants to get the data from a PCM, you have choices:

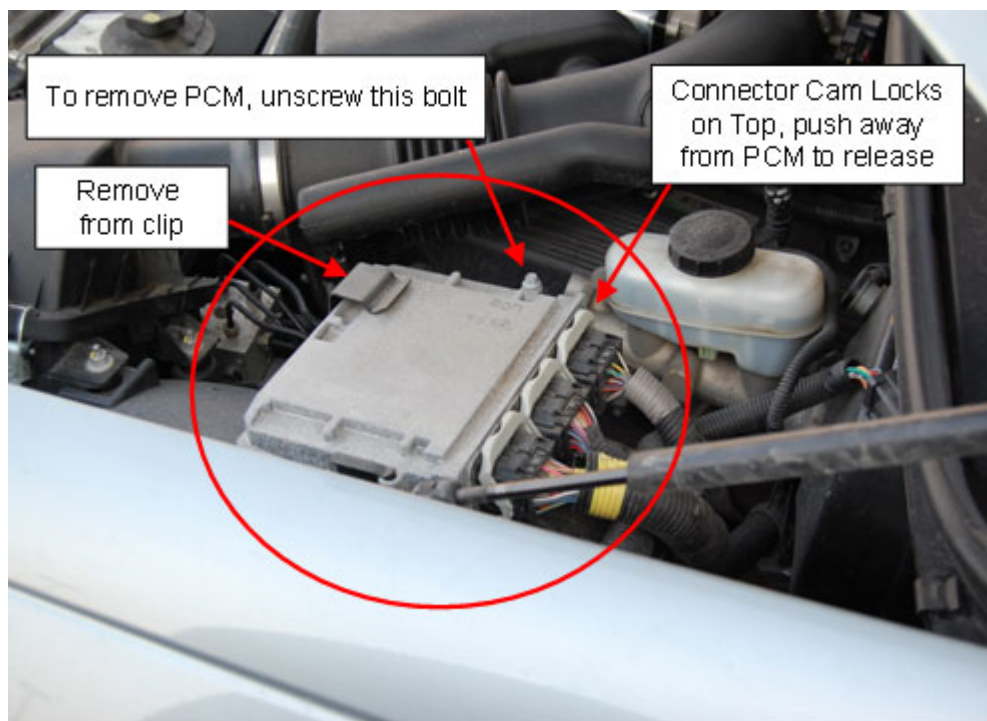
1. Hire someone who has the equipment and training to read it for you and to explain how to appropriately use the data in your specific accident. It can cost as little as \$500 for you to mail a module into a laboratory, get it read out, and have a skilled user spend up to an hour with your investigator explaining what the data means in your accident scenario.
2. Purchase a Bosch CDR System for approximately \$2600 + \$395 for software, and send an officer to training for one day to operate it and 3-4 days additional days to analyze the data and use it properly in an accident reconstruction. If you already have a Bosch CDR kit with a current annual software upgrade subscription to automatically receive the Version 3.0 update when released, the only additional purchase would be a Ford PCM adaptor and cable hardware kit when it becomes available around Nov. 15, 2007. The cost will be less than \$1000 (Bosch has not set pricing as of this writing).
3. You can network with other agencies that have a trained/certified operator and have purchased the software upgrade and PCM hardware kit already.

While the primary intent of this letter is to alert you to the risk of evidence spoliation in accidents involving your own police vehicles, you should also be aware that this event data recorder is in many other Ford vehicles and can be of significant value in traffic homicide and other serious injury automobile accidents. The Bosch CDR kit has been able to get pre-crash vehicle speed out of many 1999 and earlier GM vehicles, but this new release can get pre-crash vehicle speed out of Ford vehicles equipped with Electronic Throttle Control (ETC). It was first introduced in low volume in 2003, is in more than half the 2005's, and is in almost all new Ford vehicles today. Until this new Bosch release, only Ford Motor Company could read the modules for law enforcement. This new release raises the percentage of vehicles covered by CDR from approximately 20% to about 25%. Subject to successful completion of field testing, the new release is intended to cover selected 2005 and later Chrysler vehicles as well.

If you need more information about the Ford PCM data recorder or how to read the information in it, you can contact Richard R. Ruth, P.E. at (313) 910-5809, or by email at ruthconsulting@comcast.net. Mr. Ruth is a retired Ford Motor Company engineering manager that personally read event data recorders for law enforcement regularly, and who helped Ford release the ability to read these modules to Bosch/Vetronix. He assists the [Collision Safety Institute](#) in training and certifying police officers to use the Bosch Crash Data Retrieval System. He does not charge for initial consultations.

A sample Ford PCM readout and instructions for locating the PCM and securing it can be found at www.ruthconsulting.com.

Locating and Removing a PCM



Expected Ford PCM Bosch Vetronix CDR System Coverage

- 2003-2005 Ford Thunderbird (vehicle went out of production after 2005)
- 2003-2006 Lincoln LS (vehicle went out of production after 2006)
- 2004 Ford F150 (new platform only - NOT Heritage model)
- 2004-2007 Ford Explorer/Mercury Mountaineer
- 2005-2007 Ford F150, 2006 Mark LT
- 2005-2007 Ford Econoline (gasoline engines only - NOT Diesel)
- 2005-2006 Ford Expedition/Lincoln Navigator
- 2005-2007 Ford F Super Duty (250/350/450/550) (gas engines only - NOT Diesel)
- 2005-2007 Ford Mustang

2005-2007 Ford 500/Mercury Montego/Ford Freestyle
2006-2007 Ford Fusion/Mercury Milan/Lincoln Zephyr 06/Lincoln MKZ 07
2007 Ford Edge/Lincoln MKX
2007 Ford Explorer Sport Trac
2007 Ford Expedition - Some are covered, some are not,
depending upon supplier of the PCM

2008 Models are expected to be covered in the future

MEMO: Ford Vehicles NOT equipped with ETC

No PCM memory at this time

Ford Ranger
Ford Focus
Ford Escape/Mercury Mariner (except Hybrid)
Ford Freestar/Mercury Monterey
Ford Taurus/Mercury Sable (2005-2007) (Note: 2008 Taurus/Taurus X will be covered)
Ford GT
Lincoln Aviator

Richard Ruth will be presenting on the Ford PCM at the upcoming CDR User's Conference January 28-30, 2008 in Houston, Texas. Registration is open for this conference but space is filling quickly. For more information on the CDR User's Conference and to register please visit:

<http://www.crashconferences.com/cdrconference/2008/index.html>

Note: Registering for the conference prior to December 15, 2007 saves you \$200!

Reference Links:

- CDR Equipment Description: Bosch ETAS Group, (formerly Vetronix)
<http://www.boschdiagnostics.net/products/CDR>
- CDR Equipment Distributor: I Got Hit LLC - (800) 280-7940
<http://www.cdr-system.com>
- CDR Operator/Analyst Training: Collision Safety Institute
<http://www.collisionsafety.net>
- 2008 CDR User's Conference: Collision Publishing
<http://www.crashconferences.com>

About Ruth Consulting

Richard Ruth recently retired from Ford Motor company after 33 years in a wide variety of product engineering and product planning positions, spending the last 10 years managing Ford Design Analysis Engineers that provide technical analysis to Ford's Office of the General Counsel in product liability lawsuits and Ford Product Development in field investigations. As a "working manager", Richard has personally handled many restraints related internal Ford field investigations, gathered appropriate technical documents for discovery, gave corporate and expert depositions and trial testimony, and provided technical assistance to the National Highway Traffic Safety Administration (NHTSA), NTSB, NICB, law enforcement and third party inquiries. Put his insider's knowledge and perspective to work for you.

Based in Dearborn, Michigan, Ruth Consulting, LLC offers professional services, nationwide, to assist in any automotive restraints related area including safety belts, safety belt pretensioners, frontal airbags, side impact airbags and curtains, safety canopy for rollover, and

other pyrotechnic restraint system controlled safety devices. Richard Ruth, P.E. is uniquely qualified in Event Data Recorders and airbag system performance including deployment thresholds.

>> www.ruthconsulting.com

About I Got Hit LLC

I Got Hit LLC is an authorized distributor for Bosch CDR products in the United States and an authorized Bosch reseller for Canada. Our goal is to help you stay current with Crash Data Retrieval technology. Whether you need to buy a new CDR system, CDR replacement parts or a CDR update, we are here to help.

>> www.cdr-system.com